REVIEW of DENTISTRY for CHILDREN

PUBLISHED BY THE AMERICAN SOCIETY FOR
THE PROMOTION OF DENTISTRY FOR CHILDREN

Vol. VII THIRD QUARTER 1940

CONTENTS

Calcium Metabolism and Teeth
Rudolf Kronfeld, *Chicago* 66

The Pedodontist Contributes to Dental Health
J. M. Wisan, *Newark* 69

Teeth Examination vs. Oral Diagnosis
J. A. Salzmann, *Philadelphia* 71

Child Dentistry vs. Adult Dentistry
George E. Morgan, *Milwaukee* 72

A Pedodontic Symposium
—From the Greater New York Meeting 74

The Anterior Space Retainer
John C. Brauer, *Iowa City* 90

Sulfapyridine or Sulfanilamide
Thos. Bolling Gay, *Atlanta* 91

A. S. P. D. C. News and Activities 92

Calcium Metabolism and Teeth

Summary of Present-day Knowledge, compiled by Rudolf Kronfeld, M.D., D.D.S.

From the Foundation of Dental Research of the Chicago College of Dental Surgery

Calcification of the Deciduous Teeth. Calcification of the deciduous teeth begins at from four to six months in utero (see Table). The amount of enamel and dentin present at birth can be determined by the neonatal ring, which is an incremental line (line of apposition) dividing the prenatally formed from the postnatally formed tooth structure. The inner portion of the enamel of the deciduous teeth is mostly prenatal, the outer (superficial) portion, postnatal.

Disturbed Calcification of the Deciduous Teeth. Disturbances of the calcification of the deciduous teeth are almost entirely confined to the postnatally formed portion of these teeth. During pregnancy, when the foetus develops at the expense of the maternal organism, the mother is able to supply sufficient calcium to permit normal calcification of the teeth. After birth, however, the infant is often subjected to various illnesses and metabolic disturbances which may adversely influence the postnatally formed (outer) portion of the enamel and result in hypoplasia of the decidous teeth. Our present knowledge of the prenatally and postnatally formed portions of the deciduous teeth has led to the *tentative conclusion* that the condition of the mother during pregnancy has but little influence so far as the child's teeth are concerned. Proper prenatal attention is of paramount importance for the development of both mother and infant but it is doubtful whether it can in any way alter the tooth structure of the offspring.

Calcification of the Permanent Teeth. Calcification of the permanent teeth begins at birth with the cusps of the first permanent molars (see Table). During the first six months after birth calcification starts in the upper central incisors, upper cuspids, lower central and lateral incisors, and lower cuspids. Towards the end of the first year calcification begins in the upper lateral incisors. Between 1½ and 2½ years calcification begins in the bicuspids, between 2½ and 3 years in the second molars, and between 7 and 10 years in the third molars. The enamel of the first permanent molars is completed at three years, that of the incisors at four to five years, that of the cuspids and bicuspids at five to seven years. (For eruption time and root formation see Table.)

Disturbed Calcification of the Permanent Teeth. Enamel hypoplasia of the permanent teeth is due to postnatal influences which disturb the calcium metabolism. The most important disturbances are rickets (Vitamin D deficiency) and tetany (convulsions; disturbances of parathyroid function and of calcium balance). Disturbances and sickness during the first year of life

Chronology of the Human Dentition

Logan and Kronfeld (slightly modified by McCall and Schour)

	TOOTH		Hard Tissue Formation Begins	Amount of Enamel Formed at Birth	Enamel Completed	Eruption	Root Completed
Deciduous Dentition	Upper	Central incisor	4 mos. in utero	Five-sixths	1½ mos.	7½ mos.	1½ yrs.
		Lateral incisor	4½ mos. in utero	Two-thirds	2½ mos.	9 mos.	2 yrs.
		Cuspid	5 mos. in utero	One-third	9 mos.	18 mos.	3¼ yrs.
		First molar	5 mos. in utero	Cusps united	6 mos.	14 mos.	2½ yrs.
		Second molar	6 mos. in utero	Cusp tips still isolated	11 mos.	24 mos.	3 yrs.
	Lower	Central incisor	4½ mos. in utero	Three-fifths	2½ mos.	6 mos.	1½ yrs.
		Lateral incisor	4½ mos. in utero	Three-fifths	3 mos.	7 mos.	1½ yrs.
		Cuspid	5 mos. in utero	One-third	9 mos.	16 mos.	3 yrs.
		First molar	5 mos. in utero	Cusps united	5½ mos.	12 mos.	2¼ yrs.
		Second molar	6 mos. in utero	Cusp tips still isolated	10 mos.	20 mos.	3 yrs.
Permanent Dentition	Upper	Central incisor	3 - 4 mos.	.....	4- 5 yrs.	7- 8 yrs.	10 yrs.
		Lateral incisor	10 -12 mos.	.....	4- 5 yrs.	8- 9 yrs.	11 yrs.
		Cuspid	4 - 5 mos.	.....	6- 7 yrs.	11-12 yrs.	13-15 yrs.
		First bicuspid	1½- 1¾ yrs.	.....	5- 6 yrs.	10-11 yrs.	12-13 yrs.
		Second bicuspid	2 - 2¼ yrs.	.....	6- 7 yrs.	10-12 yrs.	12-14 yrs.
		First molar	At Birth	Sometimes a trace	2½- 3 yrs.	6- 7 yrs.	9-10 yrs.
		Second molar	2½- 3 yrs.	.....	7- 8 yrs.	12-13 yrs.	14-16 yrs.
		Third molar	7 - 9 yrs.	.....	12-16 yrs.	17-21 yrs.	18-25 yrs.
	Lower	Central incisor	3 - 4 mos.	.....	4- 5 yrs.	6- 7 yrs.	9 yrs.
		Lateral incisor	3 - 4 mos.	.....	4- 5 yrs.	7- 8 yrs.	10 yrs.
		Cuspid	4 - 5 mos.	.....	6- 7 yrs.	9-10 yrs.	12-14 yrs.
		First bicuspid	1¾- 2 yrs.	.....	5- 6 yrs.	10-12 yrs.	12-13 yrs.
		Second bicuspid	2¼-2½ yrs.	.....	6- 7 yrs.	11-12 yrs.	13-14 yrs.
		First molar	At Birth	Sometimes a trace	2½- 3 yrs.	6- 7 yrs.	9-10 yrs.
		Second molar	2½- 3 yrs.	.....	7- 8 yrs.	11-13 yrs.	14-15 yrs.
		Third molar	8 -10 yrs.	.....	12-16 yrs.	17-21 yrs.	18-25 yrs.

may cause hypoplasia of the incisal or occlusal portion of the following teeth: $\frac{6\ 3\ 1\ |\ 1\ 3\ 6}{6\ 321\ |\ 123\ 6}$; if the disturbance extends into the second year of life, the upper lateral incisors will also be hypoplastic. The bicuspids and second molars are rarely hypoplastic, probably because severe metabolic upsets are less common after the age of two years. Only those portions of the teeth can become hypoplastic which are calcifying at the time of the disturbance.

Mottled Enamel. Mottled enamel is a chalky white, brown, or black discoloration of the enamel of the decidous and permanent teeth. In severe cases the teeth are pitted. It is caused by the presence of soluble fluorine salts in the drinking water in a concentration of from 1 to 14 parts of fluorine per million (1 to 14 milligrams per liter). Only the developing portion of the teeth is affected; once enamel formation is completed fluorine does not noticeably affect the teeth.

Negative Evidence concerning Calcium Withdrawal from Teeth. In scientific literature the statement is frequently encountered that bones and teeth are "storehouses of calcium from which calcium may be withdrawn." This statement is correct so far as the bones are concerned, but incorrect with regard to the teeth. Calcium from the skeleton can be mobilized either by osteolytic or osteoclastic activity. *No such mobilization of calcium from the teeth has ever been demonstrated.* On the contrary, all experimental evidence indicates that the calcium content of the teeth is very stable. There is probably a slight physiologic increase in the calcium content of the dentin throughout life; for the enamel no alteration of the calcium content has ever been demonstrated. The only way in which enamel can be altered in structure or composition is by factors originating *outside* of the teeth (abrasion, erosion, caries, mineral acids, etc.).

Caries and Pregnancy. There is no conclusive statistical evidence that the incidence of caries during pregnancy is greater than the incidence in non-pregnant women of corresponding age. A possible increase of caries during pregnancy would have to be explained by such factors as lack of care, gingivitis, vomiting, or increased intake of carbohydrates; there is no evidence of calcium withdrawal from the mother's teeth.

Calcium Therapy in Dentistry. From the foregoing it is evident that attempts to improve the structure of erupted teeth by means of calcium and phosphorus or vitamin preparations are useless. Even if the calcium were assimilated by the body there is no way in which it could be incorporated into the enamel of fully formed, erupted teeth.

The important period for the structure and composition of the enamel of the permanent teeth is from birth to the age of five or six years. Especially significant with respect to the first permanent molars are the first two years of life. During this formative period a diet well fortified in the necessary building elements is essential for strong, well-built teeth. The

best natural source of calcium is milk. Vitamin D, which is necessary for the proper assimilation of calcium by the body, is found in milk, butter, egg yolk, cod liver oil, and other fats; if necessary it can be supplemented in the form of vitamin D concentrates.

Once the teeth have erupted they have just as good or just as bad a structure as they are going to have for the rest of their life.

BIBLIOGRAPHY

1. Chronology of Tooth Calcification: Dent. Cosmos 74: 1053, 1932; Jour. Am. Dent. Assn. 20: 379, 1933; 22: 1131, 1935; 22: 1521, 1935; 23: 675, 1936.
2. Neonatal Ring: Jour. Am. Dent. Assn. 23: 1946, 1936; 26: 18, 1939.
3. Enamel Hypoplasia of Deciduous Teeth: Jour. Am. Dent. Assn. 26: 18, 1939.
4. Enamel Hypoplasia of Permanent Teeth: Jour. Am. Dent. Assn. 20: 379, 1933; Am. Jour. Dis. Child. 48: 714, 1934.
5. Mottled Enamel: Jour. Am. Dent. Assn. 20: 319, 1933; 21: 1421, 1934; 26: 900, 1939; Ill. Dent. Jour. 8: 194, 1939.
6. Caries and Pregnancy: Am. Jour. Obstet. and Gyne. 12: 710, 1926; 27: 679, 1934; Dent. Cosmos 75: 445, 1933; 77: 864, 1935.
7. Calcium Metabolism and Teeth: Jour. Am. Med. Assn. 110: 870, 1938; Ill. Dent. Jour. 8: 360, 1939; Schour in Gordon, Dental Science and Dental Art, Chap. II, 1938; Kronfeld, Histopathology of the Teeth, Chap. II, 2nd Edition 1939.
8. Calcium Therapy in Dentistry: Jour. Am. Dent. Assn. 23: 139, 1936.

The Pedodontist Contributes to Dental Health*

By J. M. WISAN, D.D.S.

Dental authorities agree that our present knowledge of dental caries is inadequate. Certainly no scientific evidence has been presented to indicate how all persons may be protected from tooth decay. A study of the causative factors of dental decay is indeed complex, leading into a number of frontier fields. To cite a few examples, genetics, nutrition, orthodontia, dental anatomy, oral hygiene, endocrinology, physiological chemistry are involved in the study of chemico-parasitic process called "dental caries."

But we are faced with the challenge that dental caries is the gambit of dental health discussions. We are in need of tangible data. Clarification by research studies in laboratories and by careful clinical observations are indispensable if we are to improve dental health. It is hoped, then that scientific laws may be evolved and principles of application determined to reduce the incidence of dental decay.

The dental practitioner has a distinctive responsibility in attaining the ideal of dental health. His is the task of accurately and scientifically observing correlations and recording data from dental conditions among his patients. Undoubtedly, the dentist who treats children is in a position to make the greatest contribution in analyzing the effectiveness of preventive procedures and in the promotion of dental health.

---

*A National release from the American Association of Dental Editors.

The dentist is the basal unit of the dental health program. He treats the individual, the child, the parent. He may observe the dental conditions of the individual as compared with the dental conditions of the other members of the family. Thus he is able to estimate the influence of heredity. He may obtain information concerning the health practices of the members of the family as well as the individual he is treating. He may observe the anatomical characteristics of the teeth.

As he reviews his findings the private dentist will, undoubtedly, conclude that in helping his patients increase their resistance to dental caries, it is necessary to study each patient individually and *methodically.*

We may cite a hypothetical case to illustrate the point. Mary Jones is brought to the dental office by her mother who asks that the necessary dental treatment for the child be rendered.

The initial examination indicates that the child is highly susceptible to dental decay and shows marked malalignment of the arches. It would seem that if Mary's dental conditions are to be improved not only should infected teeth be removed, pits, fissures and carious cavities filled, and orthodontic treatment instituted, but also dental health practices must be adopted by the patient.

In other words, the dentist's treatment is to be reinforced by those measures that would tend to maintain the health of the mouth.

The dentist, to do this most effectively, should thoroughly observe the conditions in Mary's mouth and in the mouths of other members of her family. He should study the probable causes of these conditions, question Mary about her health practices and, from her mother, obtain information concerning the health practices of the family. He is then in a position to make his recommendations. It would seem that he could do this more intelligently if he *routinely* systematized his diagnostic efforts.

Each patient may be examined and studied, using the following routine:

(1) Name and age (Date of examination)
(2) Caries index (according to Bodecker)
(3) Parents' index (according to Bodecker)
(4) Grandparents' index (if available)
(5) Medical history
    (a) Child
    (b) Parents and family
(6) Arch formation and tooth alignment
(7) Structure of teeth
    (a) Structure of cusps (Bossert)
    (b) Surfaces showing pits and fissures (Hyatt)
    (c) Susceptibility of proximal surfaces (Rapier)
(8) Stains
(9) Evidences of dental health practices
    (a) Dental Treatment
        1. When dental treatment was first rendered
        2. Frequency of dental treatment

3. Type of treatment rendered
(b) Patient's hygienic practices
(c) Dietary practices
1. Child
2. Parents and family
(d) Attitude toward dental health practices
1. Child
2. Parents and family

The first reading of this outline may give one the impression that items have been included that might well be omitted. However, if the reader will study each item carefully and note how each one of them may reflect its influence on the whole dental health picture he will agree that none should be eliminated. For instance, he may note the relationship of cusp formation and pit and fissure decay or the coincidence of proximal cavities and missing teeth.

Undoubtedly, the reader may have found that some other procedure would do as well as the one suggested here. The most important point which the writer has attempted to present is that the treatment of children should be systematically performed both in respect to the dental operations and the recommendation of dental health practices.

Teeth Examination *vs.* Oral Diagnosis

J. A. SALZMANN, *Philadelphia*

The following incident actually happened, in spite of the fact that it may read more as a figment of the imagination than as an actual occurrence in a modern dental office. As a result of efforts in the field of public dental health education during the past decade, Walter (this is his story) had been seeing his dentist regularly "twice a year" since he was four years of age. At age 14, he had been sufficiently sensitized to dental care to know that the loss of a filling was a serious matter, and although it would interfere with his football date, he called his mother's attention to his loss. Torn between football and an appointment with the dentist, a compromise was effected, and Walter visited a dentist in the immediate vicinity of his home instead of taking time to go to the dentist under whose professional care he had been for the past ten years.

"Mother," said Walter that evening at dinner, "Dr. J— told me I had to have my teeth straightened."

"That's odd," said Walter's mother, "Dr. B— has been seeing you for the past ten years and has never mentioned anything like that."

Walter's father decided to take Walter to his own dentist in order to check on the other two dentists, the one Walter had been visiting regularly, who never mentioned "teeth straightening," and the neighborhood dentist whom Walter visited in the emergency and who suggested that the "teeth be straightened." Walter's father's dentist was one of two dentists, brothers who

practiced jointly and whom Walter's father had known since all three had gone to the same high school.

"Joe," said Walter's father to the other of the two dentist brothers after the boy was seated in the dental chair, "What do you think is wrong with Walter's teeth?" The dentist picked up his mirror and explorer, asked the boy to open his mouth, and after about a minute turned to Walter's father and said, "I think he needs a filling."

"That's all he needs, eh? You look at him, Harry," said Walter's father to the second of the two brothers.

Harry went through a procedure similar to that of his brother. "I think the filling can wait for another six months."

"So that's all you think Walter needs and you call yourselves good dentists!" said the father. "Walter, close your teeth together."

"Now, Joe, and you, Harry, look at his teeth again."

The brothers looked and saw a gross malocclusion in the form of a "crossbite" with all of the right maxillary teeth distal to the lateral incisor resting snugly in the vestibule of the mouth, buccally to the right mandibular teeth. This condition was not at all evident when the mouth was open and as a consequence, the brothers had missed it when they failed to examine the mouth with the teeth closed.

MORAL: Stop *examining teeth.* Begin making *oral diagnosis.*

CHILD DENTISTRY vs. ADULT DENTISTRY*

By GEORGE E. MORGAN, D.D.S.

We are unmindful of the fact that deciduous teeth are not temporary teeth; that no cavity, whether it be in the permanent or deciduous tooth, is too small to fill; that the six year molar is a permanent tooth and must be spoken of only as the first permanent molar; that the first permanent molar is not the most important tooth in the mouth, but that all teeth are of equal importance; and that dentistry for children is a demanded necessity.

Yet, we hear professional men of high caliber say, "Anybody can fill a deciduous tooth." This to me is an admission on their part of failure in dentistry for children because they are not willing to accept the inevitable truth that to correctly restore a deciduous tooth to health and function and at the same time manage the child psychologically is one of the most difficult tasks in dentistry.

Do you in adult dentistry have the phenomena of jaw growth and development; prenatal as well as postnatal? Do you have tooth formation and exfoliation; normal and abnormal? Do you have the differences in anatomical characteristics of teeth to hinder the retention of a restoration? Do you have more complicated problems in malocclusion and dental anomalies?

---

*A national release from the American Association of Dental Editors.

Do you have greater susceptibility to dental caries; the disease of which the cause is still unknown? Do you have young personalities to impress with the importance of good teeth, good health habits and good dentistry? Do you have immature minds lacking experience in both reason and judgment together with overly anxious parents to handle?

When all of these things are considered you cannot help but conclude that successful dentistry for children assumes the greater responsibility for the future of our civilization and our profession. Do your part intelligently and wisely or be broad-minded enough to admit your shortcomings by referring your child patients to some other dentist or pedodontist for care. Dentistry for children is not a luxury, neither is it an expensive necessity, if care is provided early, regularly and systematically because the more complicated conditions can be prevented. It is important for us to be consistent in our methods of practice be it general or some special phase of dentistry. We as a profession owe to our patients and especially to our child patients the best that can be obtained. No doubt, it is true that some individuals are more tempermentally adapted to the management of the child than others. However, it is possible for us to improve ourselves if we will only apply in our practices some of the fundamental principles of child psychology.

The time-worn excuse that "Children's dentistry does not pay" meaning that you cannot receive a just fee for good dentistry for children is wrong. Parents of today are eager and more than willing to provide their child with good dentistry if they can find someone to do it correctly.

Let us resolve now to do better dentistry for the child — the adult of tomorrow.

The Southern California Report

Regular meeting held June 12, 1940, at the home of Dr. Spencer Atkinson, Altadena, Calif. Thirty were present.

The evening highlight was an informal discussion by Dr. Atkinson. With enlarged photographs and many hundreds of dissected specimens, he demonstrated in progressive steps, the path taken by the developing tooth buds from their origin, at the alveolar crest, to their place within jaw where they complete development and erupt. This migration of the teeth was clearly demonstrated and was very interesting to those present. We were also shown many specimens demonstrating anomalies and there probable cause.

We are grateful to Dr. Atkinson for a very educational and entertaining evening.

CHARLES K. BEAMER, D.D.S., *Secretary.*

A PEDODONTIC SYMPOSIUM

*From the Greater New York Meeting**

PRACTICE BUILDING

THEODORE O. PETERSON, *Brooklyn, N. Y.*

What practical hints can you suggest to have satisfied patients recommend others?

(a) We may first take it for granted that the dentist is a fairly good dentist in that he has satisfied patients. But let us be in an analytical mood and take stock and see where improvements can be made as to person, office, atmosphere and operative procedure. There must be a reason for the success of Dr. A., Dr. B. has had the same advantages but has utterly failed as a dentist. What makes people like or dislike a dentist? Is there something agreeable or disagreeable in the personality of Dr. C.? You and I have our good and bad points. No one is perfect but it is good for the soul and also good business to make an inward and outward inspection of our person. What makes Dr. Smith click with his patients? They say he is wonderful. He is enthusiastic. His integrity is without question. His manner is sympathetic, free from nervous and irritating habits. He has clean, well groomed appearance, hands well kept. He has an even, well modulated voice. He has a kindly face and a ready natural smile. He gives an impression of sincerity. He looks the patient in the eye with reassuring confidence. He is a friendly man, and so makes friends on the outside who soon seek him as their dentist. The satisfied patients proclaim him the best dentist they ever had. Now here is a practical hint to our brother dentist. You have it within your power to emulate and become as this dentist described. Your patients recognize every improvement and are not slow to advertise your good graces.

(b) Another practical hint: The appeal of a clean dental office. I am not thinking of a grandiose dental office with every conceivable appointment which awes the individual. Neatness and taste in arrangement will attain effect more easily than lavish display. Space does not permit of elaboration of the need for quiet refinement in the reception room with the best monthly publications.

The operating room requires some attention. Patients' roving eyes see many things and if the equipment is modern and complete—if cleanliness and the necessary sterilization is evident, the patient is impressed and will not hesitate to tell others. The patient is made aware of the routine care given to bracket table, hand pieces and especially instruments. The attention of seating comfortably and using the antiseptic spray is perhaps a minor detail, but patients like this attention.

---

*These questions have been selected from the large number of eminently practical questions presented at the last Greater New York Meeting, and the answers are written by the respective essayists with special thought to their application to children.

(c) By this time the patient is assured that she is in the hands of a competent dentist. She learns further that he is very active in professional affairs, attends meetings and is not too big to know that he still has much to learn. A hunger for and acquisition of knowledge gives the dentist poise and assurance which is certain to impress the patient. The patient lauds her dentist. He knows his business.

(d) It is a well known fact that the fear of pain will keep patients away from the dentist. How thankful patients become when after hours and days of mental suffering before the dental appointment, the hour in the dental chair is found to be almost a pleasure. Use anaesthesia and plenty of it. Have your patients leave your office with a blessing on their lips. There is no excuse for painful operations today. Again I say, use means at hand for painless operative work and it will follow as the night the day that satisfied patients will be your best advertisers. These practical hints if acted upon will bring more patients to the office.

Describe a successful system of recalling patients.

In order to serve our patients best it is imperative that they return at regular intervals for prophylaxis and a general check up. Patients appreciate this service. There need be no fear that the office is exerting pressure in securing future appointments. Patients are prone to forget and procrastinate but if a definite understanding is had at the conclusion of the first visit, that in six months the patient will receive notice of appointment, there cannot possibly be any misunderstanding of motive.

A system of recall need not be complicated. Either a recall list or a recall card system can be instituted. The purpose of the recall list is to supply you with the names of patients who are to be given appointments during the current month for periodical examination and prophylactic treatment. As new cases are completed and patients request that their names be placed on the call list, the monthly call lists grow appreciably.

Mrs. Jones, a new patient, has her first visit on January 15th. When her work is completed February 1st, the advantages of a recall system is explained to her. She cheerfully agrees to a return for a check up and prophylaxis in August. Her name is then entered on the August call list.

When in August the appointment notice is sent, a check mark is entered in the column. The matter of notifying the patients can best be done by a typed and personally signed letter calling her attention to the fact that you are giving her an appointment in accordance with her request.

At the end of the month all names on your current list should be posted to the sheet representing the month in which they are to come for the next visit.

Would it help the dentist whose time is not all taken to offer services for a somewhat lesser dental fee (especially children) if they could come in during school hours or at the dentist's convenience when his time was not so well taken up?

Time is the most important element in a dental practice. It would be enlightening and perhaps surprising for the dental profession to learn how many minutes and hours are lost each day. Multiply these hours and in a year's time the unproductive hours would reach a considerable sum. Were we to analyze the operative work each day, we would possibly find that the morning hours are most unproductive. Patients prefer to come in the afternoon. Of course the dentist is ever ready to please and so crowds his afternoon appointments to such an extent as to make it almost impossible to do good dentistry. Who can prepare and fill an M.O. amalgam in 20 minutes, or who in the profession is so expert as to give a prophylaxis service in this time or take an impression for a full lower. Where is the psychological expert who can in this time quiet the fears of little Johnny and then go to work. How much time is consumed in seating the patient—using the mouth spray—studying the chart indicating the work to be done. So if we allow one-half hour for our patient, perhaps ten minutes of this time is taken just in preparation. You know we must wash our hands. If we space our appointments to take say an hour or more, better and more operative work will be done and it will prove more economical to the patient and at the same time conserve the energy of the dentist. But the answer comes—"I cannot arrange my appointments this way. My little patients go to school and permission will not be granted to come during school hours." Are you so sure? If true, it is a pity. If the purpose is to have Johnny come during school hours, say 10 o'clock in the morning, just for one-half hour, that is to my mind an imposition but where we assure the school authorities that Johnny will not be away from school more than two mornings at the most, the teacher or principal will see the advantage to the little patient and will so cooperate. The parent will not be slow to realize that more productive work can be done this way and it follows that there being less lost motion, the cost of dental work will be less.

There is nothing unethical in the suggestion that a dentist offer his services for a somewhat lesser fee to children who come at the times most convenient to the dentist. On the contrary, the motive is an unselfish one and redowns to the lasting benefit of the little patient. These little patients are well worth cultivating now. Our future practice may depend upon them.

RADIOGRAPHY

THOMAS B. WADE, D.D.S., *Philadelphia, Pa.*

What way would you film the upper jaw in order to orientate an impacted or unerupted third molar?

There are three ways in which an upper unerupted or impacted third molar can be x-rayed:

(a) From the side, directing the rays right angle to the third molar region, or direct the rays at a slight posteroanterior or anteposterior angle.

(b) A posteroanterior view of the accessory nasal sinuses.

(c) With a No. 2 film, or a small film, placed between the bite of the respective side. From just above the frontal bone direct the rays distal at an angle of about 75 to 80 degrees. Of course the time exposure must be lengthened.

In taking lateral plates of mandible what do you avoid?

In making a lateral view of the mandible, one must avoid a superimposition of the other side, also the vertebra of the neck. To get the entire length of the mandible requires two separate films. For the ramus and molar region (sometimes the bicuspid region) place the patient flat on the cheek of the respective side, then direct the rays below the opposite jaw distal at about 75 degree angle.

For the bicuspid region forward to the median line, place the patient's head on the respective side with the side of the point of the nose and the side of the point of the chin on the film. Direct the rays anterior, below the opposite side, at about the same angle.

Is there any means of overcoming superimposition of teeth in bite wing films taken of teeth with slight irregularity?

To overcome superimposition of teeth with the bite wing film with slight irregularity, one should try to direct the rays at a right angle to the space. I know this is not always possible. I suspect the question implies more than is asked. Where there is an overlapping of the teeth we have a double density on the film.

If a small cavity is present on the approximal surface of either tooth, perhaps one would ask which tooth is the cavity in. As a cavity progresses it always burrows toward the pulp and as a rule it has the outline of an arc. If one is capable of making a good, snappy film, the depth of the arc will be towards the pulp of each respective tooth.

Pulp Management and Erosion Caries

WILLIAM B. DUNNING, D.D.S., *New York, N. Y.*

What conservative treatment may be carried out (a) when a pulp is accidentally exposed (b) when caries have penetrated the pulp wall?

Under (a) I should say that the cavity be rinsed with a warm saline solution, the tooth isolated, the cavity dried and an application of 10 per cent

aqueous solution, silver nitrate, be made to the pulpal wall; the excess fluid being removed, a thin layer of zinc oxide and eugenol paste may be flowed gently over the surface and the rest of the cavity filled with a thicker mix of this paste. If there are any untoward symptoms within a few days, the outer two-thirds of this filling may be taken away carefully and oxyphosphate cement flowed over the deep part of the filling. I should maintain this temporary filling for at least six months, replenishing the cement as needed, with occasional tests for vitality.

Under (b) the treatment would be substantially the same, supposing the pulp to be distinctly vital. If in doubt about the pulp, removal will be necessary.

Describe a method of procedure in the case of a devitalized pulp in an incisor tooth of an eight-year-old child, with special reference to the filling of the large funnel shaped canal. What is the prognosis?

The treatment of this tooth is one of the most difficult of our operations. I should advise filling the canal, with a large apical opening, with a carefully prepared sterile gutta-percha point fitted to reach just to the apex. The canal being sterile and dry, it is lined with Dr. Buchbinder's paste, which consists of zinc-oxide and eugenol to which a small addition of precipitated metallic silver has been incorporated. The canal being gently lined with this paste, the gutta-percha point also dipped in the paste is gently carried to place, allowing for the escape of air-bubbles. This paste will undergo setting in the course of a few hours, making a tight filling, from which, however, the gutta-percha could be removed in case of necessity. I think the prognosis of such a case may be called fair.

How can erosion on the labial surfaces best be controlled?

Our knowledge as to the cause of erosion is very limited; hence our treatment very experimental. The coating of such surfaces with lanolin at night before retiring, appears to have a retarding effect. The lanolin is applied with a soft tooth brush.

ROOT CANAL THERAPY

CHARLES OGUR, D.D.S., *Brooklyn, N. Y.*

What are the factors to be considered in the selection of cases for root canal treatment?

In the selection of cases for root canal treatment we must take in consideration

1. The age and health of the patient.
2. The condition of the adjacent teeth and investing tissues.
3. The importance of the tooth in preserving an unbroken arch, as an abutment, or from an esthetic standpoint.

4. The condition of the tooth, whether it contains vital or gangrenous pulp; whether there is any periapical destruction or any absorption of the root and cementum.

Patients in poor health, suffering from chronic debilitating diseases, prove poor subjects for the retention of many pulpless teeth. It may be unwise to place an additional burden on their already lowered resistance. Patients of advanced age have slow recuperative power and are not likely to respond favorably to the treatment of periapically involved teeth. In the treatment of teeth free from periapical diseases, the latter patients present a favorable prognosis. While a reduction in the lumen of the root canals adds to the mechanical difficulties, the small apical opening makes it easier to confine our instrumentation and filling to the canals, thus safeguarding the periapical tissues.

Of next importance in the selection of cases for treatment is a consideration of the health of the tissues surrounding the tooth to be treated. Teeth affected with periclasia present an unfavorable prognosis. The presence of other infected teeth in proximity to the one to be treated will lower the chances of success. Such infection must be eliminated first, either by extraction or treatment. The relative importance of a tooth as an abutment or in preserving an unbroken arch is greater, of course, than that of one which carries no such significance, and therefore justifies our taking greater chances in its preservation.

In cases requiring apicoectomy, do you prefer to perform this operation after the canal has been filled or at the same sitting?

In cases requiring apicoectomy it is my preference to perform the operation one or more days following the root canal filling in order to give the filling material a chance to set or harden. Since so many extreme cases show a tendency to respond following proper treatment, it is my preference to wait several months and resort to apicoectomy only when there is a failure of bone regeneration.

What are the most common errors in pulp canal therapy?

The most common errors in pulp canal therapy are:

1. Faulty diagnosis and selection of cases for treatment.
2. Lack of asepsis.
3. Unnecessary injury to the periapical tissue during instrumentation, medication or filling. Such injury could be reduced by employing a measurement control technique in opening and filling of canals, and by avoiding irritating drugs and filling materials.

ECONOMICS

DUDLEY GUILFORD, D.D.S., *Philadelphia, Pa.*

What practical hints can you suggest to help a dentist build a successful practice?

To build a successful practice it is important for a young dentist to take an active part in the community in which he lives in order to be known and well thought of. As a practical hint, I would suggest that he give as much time as possible to a free dental clinic for children and if there is none in his community, he could start one. This disinterested service will help to build his reputation and also his practice as much as anything he can do.

If at all possible he should have an x-ray machine and know how to use it. Patients appreciate an up-to-date service, but it is important to explain to them just why an x-ray is necessary and later show them the film and point out how much can be seen in an x-ray which it would impossible to see without one. Remember that many patients may think that you want to take an x-ray for the fee involved and it is important for you to convince them at you are taking it for their benefit and not yours.

Many men have emphasized the x-ray as a "fee getter." If your patients once get the idea that you are using it that way, it would be better for you not to have one. Use it only when you are sure it will be to the patient's advantage and then show them just why it is to their advantage.

Everyone dreads pain and if you can eliminate pain you will gain very many patients. I would advise every young dentist to make himself proficient in the use of both novocain and nitrous oxide-oxygen. Each has its field and certain advantages, so it is better to master the technic of both, although he may do very well with novocain alone.

Last, but not least, I would say—have your office spotlessly clean. I don't mean just clean. I mean really spotlessly clean. There is a big difference between the two and nothing impresses a patient more than a spotlessly clean office.

You may be most careful about the sterilization of your instruments, etc., and have what you consider and really is a clean office, but if it looks dingy, it won't do you much good as a practice builder. You can not expect the cleaning women in your building to do more than the rough cleaning, neither can you expect your secretary or office nurse to polish nickel and have her hands look well kept.

After many years in practice, I have found the answer in having a woman come in for an hour or two twice a week just to polish nickel and chromium, wash enamel and paint when and where necessary, and do a thorough job of cleaning.

It costs very little and it certainly pays.

How can a dentist determine a fee-scale?

In building a fee-scale the dentist should start with the average fees of other dentists in his neighborhood and for his class of practice. He should

not make the mistake of cutting under these fees and then trying to make up for it by hasty, sloppy work. That is fatal, if he ever expects to succeed.

If he will start with the average fee and then concentrate on doing a better job for this fee, in fact, the best he can do no matter how much time it takes, he will soon attract patients. When he has enough patients, he can start to raise his fees and as he gains in experience he should be able to reduce the time consumed per operation without reducing the quality of the operation.

When a dentist finds that he is working six or seven hours a day at the chair, he should begin to increase his fees gradually and keep on increasing them as the pressure of his practice increases.

Your fee is really determined by what your patients are willing to pay you, and if you have more patients than you can comfortably handle, then you are not charging them enough.

The ultimate fees you can expect to get are really determined by your ability to attract patients to you and hold them.

I think it is very important for every dentist to keep an accurate record of the time spent on each operation so that he can tell whether he is making or losing money on a given case—but never let a patient think that you are charging by the hour or tell him that you are. These time records are entirely for your own guidance in determining a proper fee and time is only one factor, often not the most important one.

You are charging for "Professional Services Rendered" and that means skill and experience as well as time.

With an accurate time record and a basic charge per hour it is not difficult to fix a fee. The fee should be higher on the time basis if the operation requires more skill—for example—jacket crowns, bridges, dentures, inlays, etc.

It is well to remember that a patient is willing to pay more for something he considers permanent, such as a bridge, dentures or jacket crowns and that it is harder to get an adequate fee for prophylactic treatments, routine fillings, etc.

Determining a fee scale is a thing which each man must do for himself. There are so many factors involved that I can only point out a few general principals.

Describe a typical presentation of services to be rendered, the fee and terms. By whom and when presented?

A presentation of services to be rendered should be accurate and clear so that the patient will know what is necessary to do and if there are any difficult operations involved, he should know that they are difficult and why.

After explaining to him just what has to be done and why it is necessary to do it, the patient should be told that an estimate will be sent him or will be given to him at the next appointment.

This will give you time to make a careful estimate and also find out about his financial standing, credit rating, etc., which are very important, if he is a new patient.

The terms and also the fees depend on what you know, or are able to find out, about the patient. If he has been coming to you for years and always pays his bills promptly, it would obviously be a mistake to mention terms or in many cases the fee, unless the amount is large. With a new patient it is best to have a written agreement stating the cost of the services and the dates for payment with the amount to be paid each date.

If you have a secretary who is tactful and experienced in this matter, it is best to have her handle it, but if you think that the patient might resent that, you can do it yourself.

The matter of fees and terms should be presented in a manner which will not offend the patient but will protect you.

OPERATIVE PROCEDURES

DR. WALTER EMERSON BRIGGS, *Attelboro, Mass.*

Describe methods of controlling pain in operations on children.

1. Complete confidence of the child in the dentist is absolutely necessary if any operation is to be successful. The control of pain on the part of the operator may make or break a successful practice.

2. Instruments that are really *clean* and *sharp* should be used.

3. Clean, sharp burs that run steadily in smoothly running handpiece (without wobbling) should be used and then discarded after each operation. Burs should not be used on patients a second time. This procedure is excellent psychology as well as good practice. Sharp burs and instruments not only reduce pain and vibration but also reduce the operating time.

4. Clean stones are preferable in many places. These will reduce vibration noises and pain considerably if properly used.

5. Sterilization of the cavity may be accomplished by using carbolic acid followed by alcohol. Dry the cavity with warm air or cotton because a blast of cold air may produce considerable pain and undo all the pain-controlling measures the operator has used. Howe's ammonical silver nitrate and formalin is valuable in very deep cavities in posterior teeth.

6. Careful instrumentation is necessary and wherever possible apply the force away from the pulp instead of toward it.

7. There are numerous desensitizing pastes that are more or less effective in many cases of deep caries, especially if they may be left in for forty-eight hours. Gutta percha should not be used as a temporary filling because in many cases it has a tendency to greatly increase sensitiveness of caries or cavity preparations.

8. Ethyl chloride spray applied very gently and lightly from a controlled valve will often aid in eliminating the pain of cavity preparation. This procedure is most applicable in anterior or bicuspid cervical caries.

9. Nitrous oxide and oxygen analgesia is very pleasant, safe and effective and is rather easily administered in most cases. A pleasant smelling, clean nose piece is essential.

10. Novocaine or Monocaine injections are effective especially in fairly long operative procedures. Sharp hypodermic needles are essential, particularly for children. Twenty-five gauge needles are excellent. Tissue should be taut before injection.

11. There are several topical anaesthesias that are often valuable desensitizers to use before injections or deep scaling.

12. Precautionary measures in operative work:

(a) Avoid overheating burs or stones by too rapid revolutions or too long application, as heat not only causes pain but may injure the pulp;

(b) When using anaesthesia or analgesia care must be taken to avoid pulpal horns and overheating;

(c) When applying matrix bands use discretion and don't jam the bands down into the gums;

(d) Anaesthesia or analgesia not only eliminates much pain but conserves the operator's time and patience.

13. Periodic examinations will reveal incipient and small caries which, if filled at this stage, will be painless and require little time. This is the secret of real "painless dentistry."

14. Practice "Prophylactic Odontotomy."

Surgical Procedure

The judgment of the operator should make the choice of anaesthesia and surgical procedure fit the particular problem at hand. Novocaine and monocaine, nitrous oxide and oxygen, ethyl chloride or ether may be used as the operator's judgment considers preferable.

What steps are effective in preventing and controlling interproximal caries in children? Are orthodontic appliances a predisposing factor in this type of caries?

1. The most effective antidote for decay of teeth is a well nourished, healthy body. To quote, "From the evidence seen in large clinics it seems as if caries in teeth is more a *symptomatic* condition, than anything else," Dr. Percy R. Howe.

2. Oral prophylaxis should include that type of brushing that cleans out the stagnant interproximal spaces in both arches, after each meal.

3. Early and frequent application of ammonical nitrate of silver at contact points and in pits and fissures will be helpful.

4. Bite wing x-rays to determine if caries are present in interproximal surfaces are exceedingly valuable.

5. Interproximal fillings should be polished so that erupting neighboring teeth will not be affected by rough and pitted surfaces which retain food particles.

6. All fillings should be contoured to re-establish original outline of teeth and to maintain good self-cleansing interproximal spaces.

7. Cavities originating on the occlusal surface may continue down and break out in the interproximal space.

8. All cavities including susceptible pits and fissures should be thoroughly filled before any orthodontic appliance is set.

9. Polish every tooth thoroughly with Berlew discs before cementing on bands of orthodontic appliance.

10. Orthodontic appliances are a pre-disposing factor in causing interproximal decay, by furnishing many areas for food retention. Caries are commonly found in interproximal spaces and on cervical surfaces under ligature wires or bands about the necks of teeth.

11. Improper fitting or loose bands and wires may become a real factor in aiding cavity development.

12. Proper construction of appliances, frequent examinations and removal of appliances at stated intervals with a thorough cleaning before resetting will do much to maintain healthy conditions and lessen the possibility of decay about the teeth.

13. Chewing hard food automatically helps to clean the teeth and at the same time it stimulates growth and function and makes for a healthier mouth.

What factors determine the advisability of placing a space maintainer after the loss of a deciduous tooth?

1. The age of the patient at the time of loss of deciduous teeth is a primary determining factor as to whether or not a space maintainer should be used.

3. History of the case as to whether the erupting time of permanent teeth is normal or slow is valuable.

4. If more than four months remain before permanent tooth should erupt, or if x-rays show less than two-thirds of the tooth developed, then a space maintainer is indicated.

5. Spaces created by loss of deciduous centrals and laterals seldom need this aid because of lateral expansion of the skull, unless they are lost at a very early age.

6. Posterior teeth from cuspid back usually need replacements if lost prematurely.

7. Position of unerupted tooth should be noted to determine whether it is started in the right direction or not.

8. Deep cusped teeth tend to lock in occlusion and seldom drift out of place. Shallow cusped teeth are quite apt to drift and slide out of position, so that this type should have a space maintainer.

9. The under development of the arch, open or closed bite relation

poor health and rampant decay are all factors that call for replacements in any spaces that may be created.

10. Well developed jaws, well spaced teeth and good health are factors that tend towards proper eruption of permanent teeth without the aid of space maintainers.

11. Education of the parents is necessary before much can be done toward the successful application of space maintainers in preventing malocclusion.

FIXED BRIDGEWORK

DR. HARRY SPIRO, *Chicago, Ill.*

Where should a fixed bridge be used? Why?

A fixed bridge should be used in preference to other restorative appliances in all edentulous spaces where a straight line drawn from the center of one abutment tooth to the other abutment tooth involved in the same bridge coincides quite closely with the stress bearing occlusal or incisal portion of the restoration. Providing, however, that the abutment teeth are well supported by the investing tissues, and that here is enough verical space, especially in more lengthy spans, for sufficient material (gold alloy) to resist flexure in the restoration under masticatory stress.

Why? From a mechanico-biologic consideration, the type of restoration to be preferred is one which will subject the pier teeth to the least amount of side force. (This is the principle force Orthodontists use for bone restoration to permit tooth migration.) The magnitude of this force and consequent deleterious effect is greatly magnified by leverage and torque action incident to movement in removable appliances. In a restoration which is rigid and fixed at both ends, we have the greatest equalization of stress on the root supporting surfaces. A fixed bridge also renders greater masticatory efficiency and comfort, and requires less care and maintenance. In a child's mouth, however, it is sometimes expedient to resort to a removable appliance temporarily, to allow more time for further development of the dentine portion of the tooth so as to avoid the possibility of pulp encroachment.

What type of abutment do you prefer for (a) posterior teeth (b) anterior teeth?

This depends upon a great number of factors, including the condition and position of the tooth, and location of caries (if present). In general, I prefer three-quarter crowns for anterior teeth particularly. Full cast crowns with a small shoulder or finishing edge are the most retentive abutments we have, and are very satisfactory in not prominent locations.

Do you approve of fixed movable bridges? If so, in what position should this type be used?

I do not approve of fixed movable bridges.

GOLD INLAYS

JAMES R. YANT, D.D.S., *Cleveland, Ohio*

How are cavity margins for inlays best prepared; do you use any special instruments? What protection do you use for the prepared cavity between visits?

Cavity margins for gold inlays are best prepared by beveling the cavo-surface angle except where such a bevel would cause distortion in wax or impression material when drawn from the cavity. This will usually occur along that part of the margin between the height of contour and gingival angle of complex class II and class IV cavities and the labial margin and labial portion of the gingival margin of class III and IV cavities when the pattern is to be drawn to the lingual.

I suggest that the bevel on the occlusal be made with a small tapered or pointed stone; on the gingival with the gingival margin trimmers and in all other locations with chisels and hatchets. That portion of the margin not beveled should be planed in conformance with the cleavage of the enamel

To protect the preparation between appointments, I use base plate gutta percha sealed in a dry cavity by the use of eucolyptol. In the event that the cavity preparation is extensive or difficulty is encountered due to the absence of adjacent teeth, a tightly fitting copper band may be so contoured that it does not impinge on the gingival tissues or interfere wih occlusion. This will act as a matrix, facilitating the placement of the filling and preventing its loss. When a proximo-incisal preparation is to be sealed, I prefer to use a celluloid crown form and silicate. When the cavity surfaces are lightly lubricated, this material may be removed quite easily.

The two important factors to be given attention in the use of temporary fillings are that the cavity be dry when the filling is placed and that its necessary life be reduced to a minimum.

What are the advantages or disadvantages of the (a) direct cast gold inlay (b) indirect cast gold inlay?

(a) The advantages of the direct cast gold inlay are maximum accuracy of fit and saving of time in the construction of the restoration. The disadvantage of this method is that it requires expert skill, especially when access is difficult or when the restoration is extensive.

(b) The advantages of the indirect method are that the pattern itself may be obtained more easily, and in the event of a casting failure the patient need not be recalled to obtain a second pattern. The disadvantages of this method are possible inaccuracy of fit due to the additional steps involved and a corresponding loss in operating time.

Describe in detail your method of construction of porcelain faced gold inlay for anterior and bicuspid teeth.

Two methods for the construction of porcelain faced gold inlays involve the direct inlay technic and are similar in that the box for the facing is

roughly prepared in the wax pattern, the casting is made, finished, set, and polished.

The two materials used for the construction of the facing, namely silicate and baked porcelain, are so dissimilar in their manipulation that the technics will be described separately.

For the baked porcelain facing the cavity requires maximum depth and square unbeveled tooth and inlay margins. An impression is taken, die and matrix made, and the inlay baked, glazed and cemented in the usual manner. The advantage of this method is that the facing itself is permanent in color and in its resistance to mouth fluids and ordinary abrasions. The disadvantages arise from the uncertain fit peculiar to porcelain inlays a possible failure of the cementing medium and the use of a complicated technic.

In the use of silicate the same maximum cavity depth and square unbeveled margins are required. However, retention must be provided by undercuts in both inlay and dentinal walls. When the cavity is broad, a window may be cut through the floor to the lingual of anterior inlays to increase the translucency of the facing. This will not weaken the restoration when a "C' inlay gold is used. The silicate is placed, using a procedure which will restore proper contour.

The advantages of the silicate facing are a lack of cementing medium and the simplicity of the technic of construction and replacement. The only disadvantage is the possible disintegration of the facing which is noticeable in some individuals. However, because of its ease of replacement this is not serious for it causes the patient's return for correction of a failure which least affects the life of the tooth. Also, we must recognize that there is a darkening with age in natural tooth structure which must be considered and when the silicate is replaced every few years a color match can be more accurately maintained.

A third method which provides the desirable qualities of baked porcelain with simplified technic, has merit in that the facing is fused to the special gold alloy used in the inlay and the entire restoration cemented to the tooth as a unit. The matrix for the baking of the porcelain is made by swaging the inlay into the amalgam die which has had platinum foil burnished over the cavity walls and margins This matrix is drawn with the inlay and the box thus formed has both gold and platinum surfaces.

This method produces a restoration having excellent esthetic qualities but with the possible inaccuracies associated with the indirect inlay technic and the lack of adaptation of porcelain tooth margins.

May I suggest that the use of porcelain faced gold inlays be limited to those cases where some other type of restoration cannot be used due to the esthetic and stress factors involved. Too often we have seen restorations fail due to the sacrifice of all other requirements to obtain a more desirable esthetic effect which may have been more imagined than real.

DIET

WAITE A. COTTON, D.D.S., *New York, N. Y.*

Should the dentist prescribe diets, and if so, in what instances is he justified?

Yes, if he has given sufficient study to the subject. The reading of a few articles in the magazines is hardly a sufficient qualification. A diet that is only based on so many calories, so much calcium and phosphorus, and so many units of vitamins, has never worked 100% for animals, much less humans. Diets cannot be given that way and obtain results, especially to those who really need them.

The food intake of an individual depends on that individual's capability of digestion, assimilation, and elimination. This divides people into groups, according to the degrees of these capabilities. So, in giving diets without *individual consideration,* all that can be done is to include in the diet foods that contain all known factors needed for nutrition, and these foods should be as simple as nature grew them. If the dentist finds that the patient is attempting to live on a very restricted diet, or unnatural foods, such as refined food, processed food, or manufactured foods and fried foods, he knows that health cannot be maintained over a period of time on such a diet. He would then be justified in calling these facts to their attention, but not attempting a food schedule for each meal. To do this he needs to have some knowledge of the individual's capabilities of food digestion, assimilation, and elimination.

What is a suitable diet for a child susceptible to rampant decay?

The fact that a child has rampant decay does not necessarily indicate that the diet is all wrong. Though frequently by changing the diet, oral conditions may be improved materially.

There are three main factors to be considered:

First—Mental or nervous disturbance;

Second—Diet;

Third—Glandular condition with poor metabolism.

As no age is given, we will assume that the child is 6 or 7 years old. A child of this age is starting school, and is away from home for some hours which is a new experience. It is making new contacts and is subject to new influences. When a child is not happy under these conditions, chances are that the mental tranquility will be disturbed, and this over a period of time often results in decay. This mental condition may be due to the teacher, to the other children, or to the school. Home or other causes which also disturb the nervous mechanism frequently result in decay. In all cases these conditions must be checked and corrected.

Here we must again emphasize that diets must be *individual.* Your experience and study of the case must guide you.

A good diet for the average child should include oranges or orange juice, or grapefruit juice, with the yolk of an egg three times a week, with other fruits such as apples, bananas, peaches, berries, pears, dehydrated, unsulphurated fruits and milk sipped, not gulped. All the fruit and milk desired for breakfast. For lunch a baked potato with plenty of butter, a green salad with non-starchy vegetables, cottage cheese, cream cheese or other kinds of cheese, and nuts. Dinner, vegetable soup (no thick soup), 3 or 4 ounces of meat or fish (no pork or veal), 2 non-starchy vegetables, desert can be of fruit, custard, baked apple and cream, and tapioca, etc. No sweet deserts, pie, cake and no candy. Simple meals are best with not too much variety at each meal. Use little salt and no condiments. Meals of this type can be varied to suit the case. Catering to childish whims is the chief cause of a large percentage of malnutrition and dental decay, particularly in the well-to-do and the rich.

What is the relationship of diet to calcification of teeth and surrounding structures in children and infants?

Our bodies are the product of the food we eat, and the only relationship that diet per se can have to calcification is, that diet must reasonably ingest and contain all the material necessary for calcification of the bones and teeth, and this material must be in usable organic form.

When all these materials are so supplied and normal calcification does not take place, the cause is then obviously a physiological one. This physiological condition in turn may have been brought about by inadequate diets or wrong food habits previously indulged in, either by the child or by the mother before birth.

Most of the diseases of childhood have a physiological action on calcification, as is noted by flaws in the enamel. As from measels and scarlet fever.

Some time ago studies were conducted on the enamel of extracted teeth of known individuals, and it was found that during calcification of the enamel, differences were observed at intervals that would correspond to the feast days and holidays that occurred during the time these teeth were forming, which would indicate that a change of food or excess food has an influence on the mechanism of calcification.

I am convinced that if the diet and living conditions of the mother and child were what they should be, that the calcified teeth on eruption would not have all the flaws which we see as pits and fissures, not only on the occlusal surface, but on the proximal surfaces as well, for we have 10% more distal cavities than mesial cavities, as the line formed in calcification is more pronounced on the distal surface than on the mesial surface, giving a greater chance for food lodgement and later decay.

DEPARTMENT OF TECHNIQUES

By JOHN C. BRAUER

The Anterior Space Retainer*

The question frequently arises, "Should I or should I not place a space retainer in the event of the loss of a foundation upper central or permanent central incisor?" In developing an answer for the above question one must take into consideration the biological factors in both dentitions. The age of three, four, and five may find a missing foundation tooth, and in this instance if only one central is missing there is no great concern about a collapse of the arch. The fact that the permanent centrals and laterals are still unerupted and that they are wider than the foundation incisors usually means that there will be additional physiological lateral development. In comparatively few instances has there been an actual collapse in the anterior incisor segment in the first dentition. There may be a probability of a speech defect if a number of the anterior teeth are lost, or the possibility of a tongue thrust, but the above is not common. If a retainer or an anterior bridge is placed one must allow for lateral development which in the upper arch is 5.25 millimeters from the time that the foundation teeth erupt until they are replaced by the permanent incisors. In the lower arch there is approximately 2.40 millimeters from the cuspid to cuspid segment.

If a permanent central or lateral is lost at the age of eight, nine, ten, eleven, etc., in most instances the arch will collapse and the space close. The centrals, laterals, and cuspids erupting in the arch will have a mesial drifting tendency to close any space present. This then will develop a serious esthetic problem in terms of a malocclusion with a partially closed space. Some retainer or temporary bridge must be placed in the event of an extraction of a permanent anterior tooth to preserve the normal contour of the arch. Such a placement of a space retainer or bridge is true preventive orthodontics, and will save many an embarrassing moment for the dentist as well as the patient. In a retainer of this type allowance for lateral development is not a factor as is the case in the foundation incisors.

One of the simplest and most positive methods of replacing a permanent central incisor at the age of eight, nine, ten, or eleven is the making of a three-quarter spring clasp basket crown, the thickness of a 30 gauge wax, and inserting a Steel's facing and backing for the lost segment. A mesial and distal slice is made on the central and lateral (if the lateral is erupted far enough) and sufficient lingual enamel removed to allow for the thickness of a 30 gauge wax. The casting is made of hard spring clasp gold which will serve the purpose very well until a regulation three-quarter can be made at the age of 15 to 18, the latter depending upon the individual case with relation to its physiological age.

*The first of three original treatises by John C. Brauer on space retention for Foundation (Deciduous) and Permanent Teeth.

Sulfapyridine or Sulfanilamide—
The Dilemma of the Doctor

THOS. BOLLING GAY, M.D.

Which of the related compounds, Sulfanilamide or Sulfapyridine, will give the most effective aid to the patient with an acute infection in his battle with the specific organism with which he is afflicted? So many physicians, and very likely dentists also in conjunction with physicians, have attempted so many times during the past twelve months to select the proper drug and have studied the results that the problem seems to be rapidly nearing a solution.

Already we feel reasonably sure that the hemolytic streptococcal infections, established as gruesome spectre raising clouds, recede in the presence of Sulfanilamide. The nonhemolytic streptococcal infections, such as the streptococcus viridans, that old enemy of the heart valves and heart muscle, are more influenced by Sulfapyridine. Sulfanilamide is very effective against the gonorrheal infections but Sulfapyridine seems to be the staff and buckler in struggling with the pneumonias and particularly with those caused by the various types of pneumococci.

We have learned that we are dealing with powerful drugs and that danger lurks near in their use but, to date, the honors lie with the users of the weapons as far as we can ascertain.

We are still at a loss to know how the drugs get in their good work. Dr. Whitby, of England, has a novel and intrigueing suggestion. He has found that the organisms are not killed outright when exposed to the drugs. They even increase in number for a short time. A little later, however, they cease to reproduce but live on and finally, after a time, die. Can it be, he asks, that the drug interferes with their absorption of nourishment so that they soon are too weak to proliferate, and at length die slowly of malnutrition?

The Program for the Annual Meeting in September may be found on Page 93.

A. S. P. D. C. News and Activities

From the President

A most outstanding program has been prepared for our fourteenth annual meeting, one that should merit the attendance of every member.

Each year the meeting of the American Society for the Promotion of Dentistry for Children is anticipated with much pleasure. It affords an opportunity to see the advancement and progress made by our society as well as affording contact with one another.

The program committee under the capable management of chairman Dr. E. L. Pettibone has been tireless in their efforts to create such a program that will be profitable and helpful and one that should inspire the largest attendance ever. The program will be one of varied subjects given by well-known men that it is not necessary to make further comment and elsewhere in this issue you will find the program.

Our meeting is open for guests so please extend an invitation to all your friends urging them to attend and assure them that we will be very happy to have them. We are proud of our society and want to show that the A. S. P. D. C. has contributed much to dentistry which has been made possible by the combined efforts of many. As long as we remember our objectives and motives so expressed in our constitution, that is to simulate the minds of the profession to the recognition of the need of dentistry for children and in particular its relation to general health, our society will continue to grow.

A new group of officers will be installed at the Cleveland meeting, and I want to take this opportunity to express my appreciation and to thank all of the officers and committees for their splendid co-operation and efforts in making this year a success.

KONRAD LUX.

From the Secretary

Everything is in readiness for the Fourteenth Annual Meeting of the American Society for the Promotion of Dentistry for Children. Doctors E. L. Pettibone and Konrad Lux have arranged for a most attractive program. All meetings will be held at the Cleveland Hotel, which is the official A. S. P. D. C. headquarters.

The first meeting of the Executive Council will be held Sunday morning, September 8, at 10:00 o'clock, in Room 9. In the afternoon the meeting of the delegates from the various State Units and the Executive Council will be held from 2:00 to 5:00 o'clock.

The annual A. S. P. D. C. luncheon this year will be known as the McFall Luncheon and is to take the place of the Annual Mouth Hygiene Luncheon. Members of the following organizations have been invited to participate with us in this affair:

The American Dental Assistants Association
The American Public Health Dentists
The American Academy of Periodontology
The American Academy of Restorative Dentistry
The Alpha Omega Fraternity
The American Association of Women Dentists
The American Dental Hygienists Association

Replies which have been received from these various groups indicate that there will be a capacity crowd present.

The complete program follows:

PROGRAM

The American Society for the Promotion of Dentistry for Children — 1940

Cleveland Hotel - Cleveland, Ohio

Sunday, September 8, 1940

Room 9, 10:00 to 12:00 A.M.—Executive Council meeting.
Room 9, 2:00 to 5:00 P.M.—Executive Council meeting.

Monday, September 9, 1940

Room 9, 7:00 to 9:00 A.M.—Executive Council breakfast.

Rooms 1-3-5, 8:00 to 10:00 A.M.—Annual Meeting A.S.P.D.C. President Konrad Lux presiding.

Rooms 1-3-5, 10:00 to 12:00 M.—Charles A. Sweet, Oakland, Calif., "Control of Teen Age Caries."
Walter C. McBride, Detroit, Mich., "Space Retainers."

Ballroom, 12:30 P.M.—The McFall Luncheon. Walter T. McFall, speaker. "Dividends for the Future."
Visiting organizations have been invited to attend.

Ballroom, 2:00 P.M.—Joint meeting with American Association of Public Health Dentists. Speaker: Richard A. Bolt, M.D., "What Parents should know about Preventive Dentistry." Dr. Bolt will tell how expectant mothers and fathers are taught in the classes of the Cleveland Child Health Association.

Ballroom, 3:00 P.M.—Speaker: Weston A. Price, D.D.S., M.S., Cleveland, "Light from Primitive Races on Fundamentals for Preventive Dentistry." Dr. Price first introduced research to the dental profession and his research has taken him to the far and obscure parts of the world. He will have new and interesting facts for us.

Ballroom, 4:00 P.M.—Speaker: Oscar B. Markey, M.D., Cleveland. "The Dentist Treats the *Whole* Child." Dr. Markey is one of our leading psychiatrists and will have an interesting and timely presentation.

Tuesday, September 10, 1940

Room 9, 7:00 to 9:00 A.M.—Executive Council meeting.

—RALPH IRELAND.

The New York State Unit

On May 14th the Dental Society of the State of New York begins its annual four-day convention at Buffalo, N. Y.

The program committee kindly arranged to give the New York State Society for the Promotion for Dentistry for Children an entire afternoon of its time to be devoted as we saw fit.

At that meeting we scheduled a few speakers, showed two excellent moving picture films on child education which have been prepared by the New York State Oral Hygiene Committee, and also conducted our annual election of officers.

THEODORE C. BLUTAU, *President.*

The Illinois Unit

Attached you will find a report on the Illinois Unit's most important meeting of the year.

With other twenty new members our unit is showing a new spurt of activity and interest this year unequalled in the past. In a well-populated State with a city the size of Chicago the new officers feel that we should be able to develop a large and energetic group of men to promote interest in children's dentistry.

Illinois Report

Over a hundred members and guests were present at a memorable and worthwhile meeting of the Illinois Unit of the A. S. P. D. C. on Tuesday evening, May 21st, at the Morrison Hotel in Chicago.

Dr. Isaac Schour, of the University of Illinois, the principal speaker of the occasion, presented new findings in enamel hypoplasia, accompanying his lecture with slides and models prepared from his experimental studies. All those present displayed great interest in his correlation of deciduous teeth disturbances with the chronological history of the tooth, both prenatal and post-natal. By experimentation with rats in which he created flaws in the tooth with chemicals applied at set time intervals, Doctor Schour had a reliable check by which to determine the dates of disturbances or occurrences which influenced the tooth structure. The most important of these "flaws" is the neonatal ring which is simply a record of birth.

Doctor Schour was followed by his assistant, Dr. Bernard Sarnett, who completed the lecture with slides and explanations of the ideologic, morphologic and chronologic classification of causes of enamel hypoplasia, showing particularly the effects on the enamel of rickets, hyper-parathyroidism and congenital lues.

Dr. Carl Greenwald, president of the Illinois Unit, introduced a number of distinguished guests who spoke briefly commending the work of the

Society. Among these were Dr. Charles W. Freeman, dean of Northwestern University Dental School; Dr. Harold Welch, president of the Chicago Dental Society; Dr. William I. McNeil, president-elect of the Chicago Dental Society; Dr. Ralph Bengston, president of the Chicago Society of Orthodontists, and Dr. William H. G. Logan, dean of the Chicago College of Dentistry.

R. WINFIELD SCOTT, D.D.S., Oak Park, Illinois.

The College of Southern California

The College of Dentistry, University of Southern California, in response to the needs and trends in modern dentistry, is pleased to announce the first Conference-Institute for the Study of Dentistry for Children, Preventive, and Public Health Dentistry, July 15 to 20, inclusive.

We are also happy to announce the following as faculty members:

Julio Endelman, M.S., D.D.S., F.A.C.D., D.D.Sc., Professor of Dental Pathololgy, Therapeutics and Diagnosis, Chairman Graduate Division.

Floyde E. Hogeboom, D.D.S., F.A.C.D., Professor of Dentistry for Children. Director of Conference-Institute.

John C. Brauer, A.B., M. Sc., F.A.C.D., Professor of Pedodontics, and Director of the Bureau of Dental Hygiene, University of Iowa, School of Dentistry.

John E. Gurley, D.D.S., F.A.C.D. Noted specialist in Children's Dentistry, San Francisco, California.

Albin Oppenheim, M.C., Research Professor in Orthodontics, U.S.C. Late professor at University of Vienna.

Spencer R. Atkinson, D.D.S., M.D. Sc., F.A.C.D., Professor of Orthodontics.

Charles A. Sweet, D.D.S., F.A.C.D. Noted specialist in Dentistry for Children, Oakland, California.

Marian Irving Scott, D.D.S., Assistant Chief of Dental Service, Division of Public Health Education, State of California.

Harold F. Hawkins, D.D.S. Former Professor of Bacteriology, U.S.C. Noted Dental Nutritionist.

William P. Harrison, D.D.S., F.A.C.D., Professor of Oral Anatomy and Oral Physiology.

J. Walter Reeves, A.B., M.D., F.A.C.S., Professor of General Anatomy and Physiology.

Earnest M. Jones, D.D.S., Professor of Operative Dentistry.

C. Fordyce Nelson, D.D.S., Specialist in Exodontia, Anesthesia, and Minor Surgery.

Several special clinical and laboratory assistant instructors have been included in the personnel of instruction. The number of registrants will be limited to a maximum of fifteen who satisfy requirements as to standards of practice. The application to join the Conference-Institute should be accompanied by the fee of $50 which includes he dinner at the University Club every night throughout the course preceeding the lectures which will be given beginning at 8:00 p.m. The list of instruments and materials required for the course will be mailed upon acceptance of the application.

We request that you communicate with the Director of the Conference-Institute at your earliest possible convenience should you desire to register for this course, or for the purpose of securing more detailed information.

FLOYDE E. HOGEBOOM, *Director of Conference-Institute.*

BOOK REVIEW

Radiography for the Child

John Oppie McCall, Director of the Guggenheim Dental Clinic, New York City, and Samuel Stanley Wald, Head of the Department of Diagnosis and Roentgenology at the same institution, are co-authors of a text entitled Clinical Dental Roentgenology. The sub-title reads, Technic and Interpretation including Roentgen Studies of the Child and Young Adult.

This text is the first in Radiography to give any great consideration for the child and consequently should be welcomed with open arms by those interested in children. It is perhaps the most readable and instructive book in the field in which a gallant attempt has been made to simplify the procedure both for teaching purposes and for general use in the office.

He has included three complete chapters on radiograms of the normal child, dividing it into "The Prenatal and Pre-Eruptive Period," "Early Eruptive to Eight-Year Period," and, "Pre-Adolescent to Maturity Period." Additionally in a very illustrative chapter entitled, "Technic for Intra-Oral Films," he has used both a child and adult patient photographically to show the angulation, position of the patient, and the assistance of the patient for each radiogram to be secured.

Generally, the book is divided into three parts:

(1) Selection of, exposure times, and processing of films.
(2) Radiograms for children.
(3) Histology and pathology of the jaws and teeth of both children and adults.

For a child, including the deciduous teeth and the first permanent molars, the authors recommend 16 films for a complete dental survey, twelve periapical and four bite-wing views, using number 0 or child films. For adults twenty films are recommended, sixteen periapical and four bite-wing views; the edentulous mouth requiring fourteen. To most readers this number of films, especially for a survey of a child's mouth, appears most idealistic yet logical reasons are advanced in that behalf.

If I were an Englishman or could give the proper inflection to the adjective, I'd say this was a "good" book. In plain American it's an excellent text.

W. C. MCBRIDE.